Math A4400: Mathematical Logic
3rd problem set, due at 2pm on wednesday, october 2nd.

Bring your solutions class, or slide them under the door of my office NAC 6278.

1. Let $\Gamma, \Delta \subset \text{Sent}$ be sets of sentences. Prove or give counterexamples to the following.
   (a) The set $\{\vee\gamma\delta \mid \gamma \in \Gamma,\, \delta \in \Delta\}$ is satisfiable if and only if at least one of Γ and Δ is satisfiable.
   (b) The set $\{\wedge\gamma\delta \mid \gamma \in \Gamma,\, \delta \in \Delta\}$ is satisfiable if and only if both Γ and Δ are satisfiable.
2. Let K_0 be the set of atomic truth assignments V_0 such that $V_0^{-1}(T)$ is finite. Let K be the set of truth assignments extending some $V_0 \in K_0$. Is there a set of sentences Γ such that $K = Mod(\Gamma)$?
3. Let $\Gamma \subset \text{Sent}$ be a set of sentences; compare $Mod(Th(Mod(\Gamma)))$ to $Mod(\Gamma)$.
4. Ask an interesting question about this week's material and try to answer it. This question is as serious as the rest of them!